and gender, including physician visits, pain-clinic visits, neurology-clinic visits, and ED visits. In the 75-84 years age group, frequency of utilization was higher by 22%, 39%, 45% and 48% for these health care resources, respectively. **CONCLUSIONS:** Epidemiology of HZ in Israel is similar to that reported for other countries. This illness presents a burden on the elderly population and is related with increased resource utilization.

PIH17

COST BENEFIT ANALYSIS ON THE LONG TERM EFFECTS OF IN VITRO FERTILIZATION (IVF) IN GREECE: AN ANALYSIS BASED ON A LIFETIME MODEL

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OBJECTIVES: To quantify the economic effects of an in-vitro-fertilization (IVF) born persons in terms of productivity gains and net tax revenues for the state in Greece. **METHODS:** A mathematical model was developed to assess the lifetime productivity and transactions between an individual and the governmental agencies. The model distinguishes amongst three periods in economic life cycle: 1) early life, when the government primarily contributes resources through child tax credits, health care, and educational expenses; 2) employment, when individuals begin returning resources through taxes; and 3) retirement, when the government expends additional resources on Social Security and old-age programs. Cost of life birth with IVF was based on a modification of a previous published model developed by the authors. All outcomes were discounted at a 3% discounting rate. The data inputs, namely the economic or demographic variables, were derived from National Statistical Secretariat of Greece and other relevant sources. To deal with uncertainty, bias corrected uncertainty intervals (UI) was calculated based on 5000 Monte Carlo simulations. In addition, to examine the robustness of our results, other one-way sensitivity analyses were also employed. **RESULTS:** The cost of IVF per birth was estimated at €17,078 (95%UI: €16,350-€17,805). The average projected income generated by an individual throughout his productive life, was €667,651 (95%UI: €538,897-€762,862). In addition, his life tax contribution was estimated at €200,295 (95%UI: €168,669-228,670), while the discounted governmental expenses for elderly and underage individuals were at €36,570 (95%UI: €33,614-€40,463). Hence, the net present value of IVF was €163,726 (95%UI: €124,533-€192,215) representing a 547% net return on investment. Results remained constant under various assumptions for the main model parameters. **CONCLUSIONS:** State-funded IVF represents good value for money in the Greek setting, as it has positive tax benefits for the government, notwithstanding its beneficial psychological effect for infertility couples and the overall productivity gains.

PIH18

CLINICAL EFFICACY AND COST-EFFECTIVENESS OF ADDITIONAL IMMUNOTHERAPY IN EARLY-ONSET NEONATAL INFECTIONS

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Infections are a major contributor to neonatal mortality and morbidity levels all over the world. **OBJECTIVES:** To assess clinical efficacy and cost-effectiveness of additional immunotherapy in neonates with severe infections in neonatal intensive care unit (NICU). **METHODS:** We observed 375 neonates (gestational age (GA) 25-41 weeks) with severe early-onset infections in NICU. Fifty-two neonates with hypogammaglobulinemia were treated with normal human immunoglobulin (NHI), 85 newborn infants with lymphopenia were treated with human interleukin 2 (HI2), 94 neonates with low mitogen-induced interferon-α production treated with interferon-α2b. A total of 144 were under standard treatment without additional immunotherapy. **RESULTS:** Administration of NHI resulted in reduction of NICU length of stay and mortality level in cases of septic shock - 7.1% [0.2%; 34%] vs 40% in a similar group without immunosubstitutive therapy ($p<0.05$). Administration of interferon-α2b reduces hospital length of stay and mortality rates (g=0.009, OR = 0.21 [0.05; 0.67], RR = 0.26 [0.07; 0.69], NNT=8 [4; 29]). Administration of HI2 reduces NICU length of stay and mortality rates from severe infection (g=0.047; OR=0.36 [0.13; 0.98]; RR=0.41 [0.17; 0.98]; NNT=9 [4; 214]). Administration of immunotherapy in early-onset neonatal infections leads to substantial cost savings up to € 168,896 per patient in case of NHI treatment, € 60,910 per patient in case of HI2 treatment and € 69, 247 per patient in case of interferon-α2b administration. **CONCLUSIONS:** Additional immunotherapy in early-onset neonatal infections is a cost-effective intervention that allows to reduce mortality rates and save money.

PIH19

COST EFFECTIVENESS OF PREMALEX (ESCITALOPRAM) COMPARED TO SERTRALINE FOR TREATMENT OF PMDD (PREMENSTRUAL DYSPHORIC DISORDER), BASED UPON THE CGI-S

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OBJECTIVES: To investigate the cost effectiveness of intermittent treatment of PMDD (premenstrual dysphoric disorder) with Premalex (escitalopram) 20 mg compared with sertraline 50-100 mg based upon the Clinical Global Impressions – Severity (CGI-S), from a societal perspective. **METHODS:** We identified one randomised placebo controlled trial with sertraline and one with Premalex, reporting the CGI-S as an outcome. Using placebo, the CGI-S was used to make an indirect effect comparison between Premalex and sertraline. The CGI-S was translated into QALY weights, through the proportion of time spent with a high degree of the anxiety/depression in the EQ-5D. Costs of health care visits were estimated using a local treatment pattern survey among GPs and gynaecologists. Official drug prices were used. A Premalex dose of 15 mg, the average of 10 and 20 mg, was assumed as it is stated in the SPC text that many of the patients will benefit from 10 mg. 37-75% lower drug costs were used in years 2-3 due to expected generic competition. Indirect costs were estimated using a published international study of the effect of PMDD on sick leave and productivity. A societal perspective was taken over a 3-year time frame. **RESULTS:** During the first year, Premalex treatment increased drug costs (SEK 1599), partly offset by indirect costs saving (SEK 1413), resulting in a total cost of SEK 186, compared to sertraline. An estimated gain of 0.0044 QALYs with Premalex compared to sertraline gave an incremental cost per QALY gained of SEK 42200 (EUR 4700). In the next 2 years, drug costs were more than offset by indirect costs saving, leading to an overall gain of 0.0132 QALYs and a savings of SEK 1600 per three years with Premalex compared to sertraline. **CONCLUSIONS:** Treatment of PMDD with Premalex is cost effective compared to sertraline, from a societal perspective.

PIH20

COST-EFFECTIVENESS OF SUPPLEMENTAL N-3 IN TOTAL PARENTERAL NUTRITION THERAPY IN THE ITALIAN, FRENCH, GERMAN AND UK CONTEXT: A DISCRETE EVENT SIMULATION MODEL

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OBJECTIVES: A very recent Meta-Analysis shows that the addition of Omega-3 fatty acid in standard Total Parenteral Nutrition (TPN) is associated with reductions in infection rate, ICU, and overall lengths of stay (LOSs) for both Intensive Care Unit (ICU) and elective surgery patients. Aim of this study is the CE analysis of its use in these patient populations, as compared to standard lipid emulsions. **METHODS:** Within a Discrete Event Simulation (DES) scheme, a patient-level simulation model was developed, with the inclusion of baseline outcomes rates from the Italian ICU patient population and from published literature; comparative efficacy data for standard and Omega-3 fatty acids-based regimens from the meta-analysis of published randomized clinical trials (conducted on 23 studies with a total of 1502 patients), and country-specific cost data. Clinical outcomes included in the model are death rates, nosocomial infection rates, and ICU/hospital LOSs. Costs are referred to Italian, French German and UK health care systems. Probabilistic and deterministic sensitivity analyses are undertaken to test results' reliability. **RESULTS:** Omega-3 fat emulsions emerged as more effective on average than standard TPN both in ICU and in non-ICU patients: in all the four national contexts here considered, reduced mortality rates, infection rates, and overall LOSs yield a lower total cost per patient. Treatment costs are completely offset by the reduction in hospital stay costs and antibiotic costs. Sensitivity analyses confirmed the robustness of these findings. **CONCLUSIONS:** These results indicate that the addition of Omega-3 to standard TPN is expected to improve clinical outcomes and concurrently give a saving for Italian, French, German and UK hospitals.

PIH21

HEALTH ECONOMIC EVIDENCE IN SUPPORT OF A LOW-DOSE CONTRACEPTIVE LEVONORGESTREL INTRAUTERINE SYSTEM (LNG-IUS 12)

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OBJECTIVES: LNG-IUS 12 is a novel intrauterine contraceptive system for up to 3 years use with an average in vitro release rate of 12μg of levonorgestrel per day. This study was conducted to estimate the relative cost-effectiveness of LNG-IUS 12 versus short-acting reversible contraception (SARC) in the United States from a third-party payer's perspective. **METHODS:** A Markov model was constructed to compare the effectiveness and costs of LNG-IUS 12 and SARC over a 3-year period in a cohort of 1000 women aged 20 to 29 years, the age group in which most unplanned pregnancies occur. SARC methods comprise contraceptives commonly used by this age cohort, including oral contraceptives, the ring, the patch and injections. Primary health states included initial/continued use of contraceptive method and method failure (unplanned pregnancies). The impact of switching methods was also incorporated into the model and tested through sensitivity analysis. Estimates for probabilities of failure and discontinuation, resource utilization and costs were derived from a comprehensive literature review, average wholesale drug prices and the 2012 Medicare Reimbursement Fee Schedule, respectively. Cost and effectiveness metrics for SARC were calculated as weighted averages using distribution of use data for SARC. One-way sensitivity analyses were performed on all key variables. **RESULTS:** LNG-IUS 12 dominated SARC in women aged 20 to 29 years, resulting in fewer unplanned pregnancies (9.86 vs. 238.75) and lower total costs ($930,187USD vs. $1,528,163USD, a 39% saving) over 3 years. The cost of contraception and number of unplanned pregnancies associated with SARC were key model drivers. Results were insensitive to variation in key input values during one-way sensitivity analyses. **CONCLUSIONS:** From a third-party payer perspective, LNG-IUS 12 is a more cost-effective contraceptive option than SARC. Additional analysis of discontinuation patterns and planned pregnancy events within future model extensions will help to further reflect real-life utilization pattern.

PIH22

CLINICAL EFFICACY AND COST-EFFECTIVENESS OF HUMAN RECOMBINANT INTERFERON-α2B IN NEONATAL INFECTIONS

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OBJECTIVES: To assess clinical efficacy and cost-effectiveness of human recombinant interferon-α2b in neonates with intrauterine infections in neonatal intensive care unit (NICU). **METHODS:** We observed 151 neonates (gestational age (GA) 25-40 weeks) with severe intrauterine infections in NICU. Group 1 included 94 neonates with severe intrauterine infections treated with interferon-α2b, 150 000 IU per suppositorium twice a day per rectum during 7 days in addition to combined antibacterial and supportive therapy; group 2 consisted of 57 neonates under standard treatment without additional immunotherapy. Initially neonates of both groups were comparable. Effectiveness data were used to populate a decision model to estimate the cost-effectiveness of interferon-α2b and standard therapy. Direct and indirect costs were measured. Published cost data were applied to assess differences in treatment costs. **RESULTS:** Low mitogen-induced interferon-α production (<12 pg/ml) was detected in 25% [18%; 33%] of neonates with severe intrauterine infections, its association with significantly higher incidence of pneumonia ($p<0.001$), necrotizing enterocolitis ($p<0.001$) and urinary tract infections ($p=0.026$) was proved. Administration of human recombinant interferon-α2b to neonates, suffering from severe infections, provides improvement of mitogen-induced production of interferon-α, reduces hospital length of stay and mortality rates ($p=0.009$, OR = 0.21 [0.05; 0.67], RR = 0.26 [0.07; 0.69], NNT=8 [4; 29]). Interferon-α2b administration for severe early-onset neonatal infections decreases direct costs per patient by 20% (direct costs per patient € 6,802 and € 8,549 for interferon-α2b and control groups, respectively). Interferon-α2b administration for intrauterine infections leads to substantial cost savings (up to € 69,247 per patient). **CONCLUSIONS:** Immunotherapy with interferon-α2b is a cost-effective intervention improves the clinical course and outcome in case of severe intrauterine infections.

PIH23

A DISCRETE EVENT SIMULATION MODEL USED FOR PHARMACOECONOMIC EVALUATION OF OMEGAVEN® IN THE CHINESE SETTING

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OBJECTIVES: Several published studies have demonstrated that the supplementation of Omegaven® has better clinical outcomes in Systemic Inflammatory Response Syndrome (SIRS) or elective major surgery patients treated in Intensive Care Units (ICUs),with shorter average lengths of stay in hospital and reduced fatality rate , as compared to standard total parenteral nutrition (TPN) regimens. The objective of the simulation study was to evaluate the CE of the supplementation of Omegaven® vs standard TPN in the Chinese setting. **METHODS:** A discrete event simulation (DES) model was constructed to compare the nutritional strategies in elective surgery and SIRS patients, by combining outcomes recorded in 79 elective major surgical patients and 56 SIRS patients receiving TPN in the surgical ICU of a tertiary hospital in Shanghai. Omegaven® efficacy estimates from a random effects Bayesian meta-analysis on Chinese and international clinical trials, and Chinese cost data collected in the same hospital, comprising ICU and general ward costs, and the cost for TPN. **RESULTS:** Omegaven® showed being effective in reducing fatality rate and total hospital length of stay (- 2.8 and -2.5 days) in both surgical and SIRS patients. In the SIRS group, the treatment could avoid 5.7 deaths every 100 patients. Reduced hospitalizations costs completely offset treatment cost, with a saving associated with Omegaven® of about 8,000 and 6,800 RMB in surgical and SIRS patients, respectively. **CONCLUSIONS:** The supplementation of Omegaven® can be considered dominant versus standard TPN, as the results of DES show that a mean increase of the effectiveness is associated with a mean decrease of the costs.

PIH24

ECONOMIC EVALUATION OF ULIPRISTAL ACETATE TABLETS FOR THE TREATMENT OF PATIENTS WITH MODERATE AND SEVERE SYMPTOMS OF UTERINE FIBROIDS

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OBJECTIVES: Ulipristal acetate - a selective progesterone receptor modulator - was proved to be effective for 3 month pre-operative treatment of moderate to severe symptoms of uterine fibroids in adult women of reproductive age. The aim of this analysis was to assess the cost-effectiveness of ulipristal acetate 5 mg as an add-on therapy to standard pre-surgical treatment in Hungary. **METHODS:** A Markov state-transition economic model was developed over 10 year time horizon. Ulipristal acetate was compared to 1) pre-surgical observation, and 2) immediate hysterectomy. The model comprises mutually exclusive health states: no/mild bleeding disorder, heavy bleeding disorder, persistent heavy bleeding disorder, myomectomy, post-myomectomy with no/mild bleeding disorder, post-myomectomy with heavy bleeding disorder, hysterectomy, post-hysterectomy, post-menopausa and death. Transition probabilities and utility values were drawn from the Pearl I clinical trial and scientific literature. Resource utilisation and unit costs were derived from the consensus panel of clinical experts and National Health Insurance Fund tariffs and publications. Costs and QALYs were discounted at a yearly rate of 3.5%. **RESULTS:** Addition of 3 month ulipristal acetate to the standard pre-operative therapy was predicted to achieve an additional 0.019 QALYs compared to observation at an estimated incremental cost of €376, resulting an incremental cost of 20,180 €/QALY. Results were most sensitive to the utility value of post-hysterectomy, but robust to changes in further model parameters. When 3 month of therapy was compared to immediate hysterectomy without any observation period, the ICER was reduced to 6,095 €/QALY. **CONCLUSIONS:** The analysis suggests that adding ulipristal acetate treatment to standard pre-surgical therapy represents good value for money according to currently accepted cost-effectiveness criterion in Hungary. Inclusion of societal benefits may considerably reduce the cost-effectiveness ratio, however further evidence from observational studies is needed to capture potential benefits of ulipristal acetate therapy on fertility.

PIH25

TESTOSTERONE REPLACEMENT THERAPY IN MALES WITH HYPOGONADISM IN SWEDEN: A COST-EFFECTIVENESS ANALYSIS

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OBJECTIVES: Testosterone replacement therapy (TRT) is recommended for the treatment of primary and secondary hypogonadism. However, long-term implications of this therapy have not been investigated extensively. Therefore, the aim of this analysis was to evaluate health outcomes and costs associated with life-long TRT in patients suffering from Klinefelter syndrome and late-onset hypogonadism (LOH). **METHODS:** A Markov model was developed to assess cost-effectiveness of testosterone undecanoate (TU) depot injection treatment compared with no treatment. Health outcomes and associated costs were modeled in monthly cycles per each patient individually along life-time horizon. Modeled health scenarios included development of type 2 diabetes, depression, cardiovascular and cerebrovascular complications and fractures. Results were expressed in terms of incremental quality of life years (QALY) gained, incremental costs and incremental cost-effectiveness ratio (ICER). Analysis was performed for the Swedish health care settings from health care payer's and societal perspective. One way sensitivity analyses served to evaluate robustness of the results. **RESULTS:** TU depot injection in Klinefelter population yielded a gain of 1.67 QALYs compared to the no-treatment at an incremental cost of 257,757 SEK (28,176 EUR), showing an ICER of 154,459 SEK (16,884 EUR) per QALY gained. Outcomes in LOH population estimated benefits of TRT at 180,400 SEK (19,719 EUR) per QALY gained. Results showed to be considerably robust when tested in sensitivity analysis. Variation of relative risk to develop type 2 diabetes had the highest impact on long-term outcomes in both patient groups. **CONCLUSIONS:** TRT treatment proved its efficacy across many clinical trials. This analysis suggests that life-long TU depot injection therapy is cost-effective in Sweden for patients with hypogonadism. Hence, it can support clinicians in decision making when considering appropriate treatment strategies for patients with testosterone deficiency.

PIH26

SOCIAL IMPACT OF ADALIMUMAB IN THE ITALIAN PERSPECTIVE

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OBJECTIVES: The assessment of indirect costs represents an extremely important issue when managing chronic diseases. Patients' lost productivity is often overlooked by decison makers, although it is fundamental for the complete estimation of the true economic impact of disease. The objective of this study is to estimate the social savings obtained with Adalimumab compared to standard therapies for the treatment of rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease and psoriasis, in the Italian population. **METHODS:** Five different economic models have been developed to estimate the cost utility of Adalimumab vs standard care for each of the diseases (the economic models were developed by external consultants). Both Italian National Health System (direct costs) and social (direct costs + loss of productivity) perspectives were adopted. For each pathology models have calculated the loss of productivity per pt/year with standard therapy and with Adalimumab. A sensitivity analysis, based on the variability of model parameters, was performed in order to assess the robustness of the results. **RESULTS:** In the base case scenario, the average annual social cost (weighted for prevalence of eligible patients for biologic treatment of each pathology) per patient amounted to €1274,25 if treated with standard care, compared with €569,48 if treated with Adalimumab. Adalimumab treatment would allow –9,4% (€42 millions) reduction of the total social cost assuming 17% of market penetration for patients eligible for biologic use. Sensitivity analysis shows that annual saving in social costs can vary from 8,1 to 11,9% assuming an average market share of 17% of Adalimumab. **CONCLUSIONS:** Adalimumab has a significant impact in reducing social costs for all the diseases considered in this study. These aspects, often neglected in decision makers' assessments, should instead be included in the overall evaluation of benefits, of innovative technologies as biologic drugs.

PIH27

COST ANALYSIS OF NEONATAL AND PEDIATRIC PARENTERAL NUTRITION IN BELGIUM

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OBJECTIVES: Parenteral nutrition (PN) is critical in neonatal and pediatric care for patients unable to tolerate enteral feeding. Considering the limited cost data on pediatric PN in Belgium, the aim of this study was to evaluate total Belgian PN costs when admixtures are produced in-hospital, either in a pharmacy or in the ward. **METHODS:** A cost-model was used to assess **the following**: nutrient costs; labor costs (personnel costs to prescribe and prepare); disposable costs (supplies used);